

NIKITIN, Nikolay Ignat'yevich. Prinimali uchastiye: ABRAMOVA, Ye.A., starshiy nauchnyy sotr., kand. khim. nauk; AKIM, E.L., inzh.-tekhnolog; ANTONOVSKIY, S.D., dots., kand. tekhn. nauk; VASIL'YEVA, G.G., inzh.-tekhnolog; ZAYTSEVA, A.F., starshiy nauchnyy sotr., kand. tekhn.nauk; KLENKOVA, N.I., kand. tekhn. nauk; MALEVSKAYA, S.S., kand. khim. nauk; NIKITIN, V.N. starshiy nauchnyy sotr., kand. fiz.-mat. nauk; ODOLENSKAYA, A.V., kand. tekhn. nauk, dotsent; PETROPAVLOVSKIY, G.A., starshiy nauchnyy sotr., kand. tekhn. nauk; PONOMAREV, A.N., kand. tekhn. nauk, dots.; SOLECHNIK, N.Ya., prof., doktor tekhn. nauk; TOKAREV, B.I., inzh.; TSVETAYEVA, I.P., kand. tekhn. nauk; CHOCHUYEVA, M.M., kand. tekhn. nauk; ELIASHBERG, M.G., doktor tekhn. nauk; YUR'YEV, V.I.; KARAPETYAN, G.O., red.izd-va; ZAMARAYEVA, R.A., tekhn. red.

[Wood chemistry and cellulose] Khimiya drevesiny i tselliulozy. Moskva, Izd-vo Akad.nauk SSSR, 1962. 711 p. (MIRA 15:2)

1. Chlen-korrespondent Akademii nauk SSSR (for Nikitin). 2. Zaveduyushchiy kafedroy fizicheskoy i kolloidnoy khimii Lesotekhnicheskoy akademii (for Yur'yev). (Celluloso)

YUR'YEV, V.I.; POZIN, S.S.; SKURIKHINA, G.M.

Studying the adsorption and electrokinetic characteristics of sulfite and sulfate celluloses in relation to aluminum salt solutions. Trudy LTA no.91:11-20 '60. (MIRA 15:12)

1. Leningradskaya lesotekhnicheskaya akademiya imeni Kirova.

(Cellulose—Electric properties)
(Aluminum salts)                      (Adsorption)

On 10/1, 1963, 001/010  
001/010

1. The purpose of this study is to determine the effect of the

viscosity of the medium on the properties of viscous  
solutions containing iron compounds

2. The study was conducted in the laboratory of the U.S.S.R. Academy of Sciences, Institute of Chemistry, Moscow, U.S.S.R.

3. The results of the study show that the viscosity of the medium has a significant effect on the properties of viscous solutions containing iron compounds. The electrokinetic properties of these solutions are also affected.

4. The results of the study are presented in the following table:

5. The results of the study show that the viscosity of the medium has a significant effect on the properties of viscous solutions containing iron compounds. The electrokinetic properties of these solutions are also affected.



YUR'YEV, V. I.

Parametric amplifier with transverse interaction and electrostatic  
focusing of the electron beam. Izv.vys.usheb.zav.; radiofiz. S  
no.1:153-161 '65. (MIRA 18:6)

L 21520-66 E4T(1)/EHA(n) JM

ACC NR: AP6007500

SOURCE CODE: UR/0109/66/011/G 2/0237/0243

AUTHOR: Yur'yev, V. I.; Machulka, O. A.

ORG: none

TITLE: Experimental investigation of the suppression of near-carrier 1-f fluctuation in a power TW-tube output

SOURCE: Radiotekhnika i elektronika, v. 11, no. 2, 1966, 237-243

TOPIC TAGS: traveling wave tube, signal noise separation

ABSTRACT: The results of an experimental investigation of the effect of secondary emission upon 1-f noise in a 10-kv 10-kw cw TW-tube are reported. For controlling the collector secondary emission, a special ring electrode was mounted in the tube, between the collector and the ray-structure output end. Both the collector and the structure were grounded, while the ring received a negative potential (1200 to 2000 v) from a special h-v rectifier. Mainly, the ring electrode repelled secondary slow electrons toward the collector; this resulted in decreasing the secondary-electron volume density and also the ion density. Through lowering the collector-region potential with respect to the beam potential by 10%, the phase noise could be reduced by 10-15 db. Orig. art. has: 8 figures and 5 formulas. [03]

SUB CODE: 09 / SUBM DATE: 30Oct64 / OTH REF: 004/ ATD PRESS: 4222

Card 1/1

UDC: 621.385.632:621.391.822.3

1.5402-25 EMT11/1EPA w.-2-ERC(t)/EE(10)-2/EWA(m)-2/EWA(h) Pm-4/Pz-5/Ped/Ti-4/  
 10-11/12 100% AT  
 ACCESSION NR: AP501635 UR/0141/65/008/001/0153/0161

AUTHOR: Yur'yev, V. I.

TITLE: Parametric amplifier with transverse interaction and electrostatic focusing of the electron beam

SOURCE: IVUZ. Radiotekhnika, v. 8, no. 1, 1965, 153-161

TOPIC TAGS: parametric amplifier, transverse interaction, electrostatic focusing

ABSTRACT: After first comparing the two basic types of parametric amplifiers with electron beams, namely with longitudinal interaction and with transverse interaction, and briefly discussing the advantages and disadvantages of this type, the author demonstrates the feasibility of a parametric amplifier with transverse interaction and with electrostatic focusing of the electron beam, which obviates the need for cumbersome magnets and complicated high-frequency circuits. The elements used to couple the signal with the beam have been proposed by R. H. Pantell (Mikrowellenrohren. Vortrage der Internationalen Tagung, Mikrowellenrohren. Munchen, 7-11 Juni, 1960, Friedr. Viewegs Sohn Braunschweig). It is claimed that the system proposed is on the whole simpler than that of I. Matsuo (Zerubezhnaya radioelektroni-

Card 1/2

L-53019-65

ACCESSION NR: AP5010685

ka v. 5, 73, 1961). Plots are presented of the gain, minimum length of coupler, frequency, and electron velocity on the potential difference between the electrodes of the coaxial line, of the dependence of the gain, minimum length, frequency, and unperturbed radius of the trajectory of the electron on the radius of the outer electrode, and the dependence of the gain on the pump signal power. Orig. art. has 3 figures and 37 formulas.

ASSOCIATION: None

SUBMITTED: 30Mar64

ENCL: 00

SUB CODE: EC

NR REF SOV: 006

OTHER: 011

CSG 2/2



YUR'YEV, V.K.

Theoretical shape of a beam having a uniform resistance to  
bonding. Trudy KAI 46:87-94 '59. (MIRA 14:2)  
(Girders)

YUR'YEV, V.K.

Design of continuous beams with an even transverse strength taking the gravity into consideration. Trudy KAI no.62:39-43 '61. (MIRA 17:2)

10.6000 1327

S/124/61/000/012/035/038  
D237/D304

AUTHOR: Yur'yev, V. K.

TITLE: Calculating panels of constant cross-section

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 12, 1961,  
18, abstract 12V128 (Tr. Kazansk. s.-kh. in-  
ta, 1958, 1, no. 37, 149-158)

TEXT: Stresses are determined in a thin-walled panel on a framework under a co-planar load of axial forces applied to the ends of longitudinal ribs and of a transverse load. The proposed method of calculation is based on the method of Yu. G. Odínokov (Tr. Kazansk. aviats. in-ta, 1946, no. 18), which allows arbitrary longitudinal displacements of the points of the construction; it is also assumed that the shape of transverse cross-section of the construction does not change during deformation. The solution for the panel is extended to numerical formulas. From the given example it can be seen that the solu-

✓C

Card 1/2

Calculating panels of...

S/124/61/000/012/035/038  
D237/D304

tion well represents the interaction of forces in the construc-  
tion. [Abstracter's note: Complete translation.]

✓e

Card 2/2

YUR'YEV, V.M., red.; SHPAK, Ye.G., tekhn.red.

[Study of thermosetting plastics] Issledovaniia v oblasti  
termoreaktivnykh plastmass. Moskva, Gos.nauchno-tekhn.izd-vo  
khim.lit-ry, 1959. 98 p. (MIRA 13:6)

1. Moscow. Gosudarstvennyy nauchno-issledovatel'skiy institut  
plasticheskikh mass.  
(Plastics)

5(3)

AUTHORS:

Yur'yev, V. M., Pravednikov, A. N.,  
Medvedev, S. S., Academician

SOV/20-124-2-26/71

TITLE:

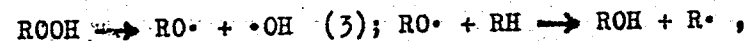
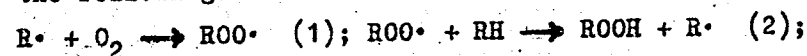
Influence of Side Chains on the Rate of Oxidation of Carbon  
Chain Polymers. (Vliyaniye bokovykh otvetvleniy na skorost'  
okisleniya karbotsepykh polimerov)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 335-337  
(USSR)

ABSTRACT:

The principal reactions in the oxidation of hydrocarbons are  
the following:



$\cdot OH + RH \longrightarrow H_2O + R\cdot \quad (4)$  . The rates of all these elementary  
reactions determine the rate of oxidation. As is known the rate  
is considerably decreased on the transition from low molecular  
weight to high molecular weight compounds of analogous structure  
(Refs 1, 2). This might be explained as follows: The removal of  
one hydrogen atom from the hydrocarbon atom is accompanied by a

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Influence of Side Chains on the Rate  
of Oxidation of Carbon Chain Polymers

SOV/20 -124-2-26/71

transition of the corresponding link of the molecule from a tetrahedral to a plane configuration. In polymers, links of the polymer chain are displaced. This is bound to increase the activation energy and thus to retard the reaction (as compared with the analogous reactions of low molecular weight compounds). The separation of one hydrogen atom from a side group (methyl-, propyl- and others) is not accompanied by a displacement of the links of the polymer chains and must possess the same activation energy as the corresponding reactions of the low molecular weight compounds. It can therefore be expected that the oxidation of the polymers with comparatively short side chains will take place mainly on the side chains. To control this assumption the authors synthesized polymethylene as well as polymers which contained the methyl and propyl side groups (Ref 4). The experiments concerning the oxidation of these polymers have shown that the introduction of side groups rapidly increases the absorption rate of oxygen (Fig 1,a); at the same time the number of oxygen molecules which are used for the cleavage of the principal chain (Figs 3, 4) increases, i.e. the oxidation really proceeds in the side chains prevalently. At a high oxidation intensity of the polymers which were produced by decomposition

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SOV/20-124-2-26/71

Influence of Side Chains on the Rate  
of Oxidation of Carbon Chain Polymers

of the diazo compounds, a "sewing up" (zashivaniye) of the polymer results as a consequence of ether bridges between the macro-molecules. A very low molecular fraction appears within the system as well. Possibly, these variations are due to the proceeding of a bimolecular reaction under participation of 2 oxygen containing radicals (Ref 6). Polystyrene is not "sewed up" at an oxidation intensity of up to about 20 ml  $O_2$  per 1 g polymer, since the concentration of the radicals and the oxidation rates, respectively, seem to be too low. There are 4 figures and 6 references, 3 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im.  
L. Ya. Karpova (Scientific Physical and Chemical Research  
Institute imeni L. Ya. Karpov)

SUBMITTED: September 29, 1958

Card 3/3



5 (4), 5 (3)  
AUTHORS:

Yur'yev, V. M., Pravednikov, A. N.,  
Medvedev, S. S., Academician

SOV/20-125-6-36/61

TITLE:

The Influence of Oxidation Products on the Kinetics of the  
Oxidation of Cetane (Vliyaniye produktov okisleniya na  
kinetiku okisleniya tsetana)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6,  
pp 1301-1302 (USSR)

ABSTRACT:

The oxidation of cetane takes place at 140° in a closed system with circulating oxygen. Figure 1 shows that, up to a reaction yield of 25-30 %, the reaction develops autocatalytically, after which it decreases rapidly and continues at a nearly constant rate above a reaction yield of 40-50 %. The concentration of peroxide compounds has a maximum at a reaction yield of 25-30 %, after which it also decreases and becomes nearly constant at a reaction yield of 40-50 %. These phenomena are indicative of the fact that, in the course of oxidation, processes occur which reduce the rate of oxidation. As in the case of hydrocarbon oxidation, the system becomes divided into two layers in the course of the process, an upper layer containing hydrocarbons and a

Card 1/2

The Influence of Oxidation Products on the Kinetics  
of the Oxidation of Cetane

SOV/20-125-6-36/61

lower one consisting of oxidation products, products of the lower layer were added to the cetane, which resulted in a reduction of the reaction rate (Fig 3). On the other hand, removal of the lower layer from the reaction vessel caused acceleration of the reaction. This proves that the reduction of reaction rate is caused by the accumulation of products which interrupt the development of the reaction. There are 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im.  
L. Ya. Karpova (Scientific Research Institute for  
Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: February 11, 1959

Card 2/2

YUR'YEV, V.M.

507/4984

PHASE I BOOK EXPLOITATION

International symposium on macromolecular chemistry. Moscow, 1960.

Mechanizmy i simpozium po makromolekulyarnoy khimii SSSR. Moskva, 14-18 iyunya 1960 g.; doklady i avtoreferaty. Sektsiya III. (International Symposium on Macromolecular Chemistry. Held in Moscow, June 14-18, 1960; Papers and Summaries) Section III. [Moscow, Izd-vo AN SSSR, 1960] 469 p. 55,000 copies printed.

Tech. Ed.: P. S. Krasina.

Sponsoring Agency: The International Union of Pure and Applied Chemistry. Commission on Macromolecular Chemistry.

PURPOSE: This book is intended for chemists interested in polymerization reactions and the synthesis of high molecular compounds.

COVERAGE: This is Section III of a multivolume work containing papers on macromolecular chemistry. The articles in general deal with the kinetics of polymerization reactions, the synthesis of special-purpose polymers, e.g., ion exchange resins, semiconductor materials, etc., methods of analyzing polymerization reactions, properties and chemical interactions of high molecular materials, and the effects of various factors on polymerization and the degradation of high molecular compounds. No personalities are mentioned. References given follow the articles.

Yur'yev, V. M., A. E. Pravednikov, and S. S. Medvedev (USSR). The Effect of Formic Acid and Formates on the Oxidation of Hydrocarbons and Hydrocarbon Polymers 364

Ronay, Z. V., and P. M. Yandakly (USSR). Study of the Effect of Some Organic and Organometal Compounds on the Thermal Degradation of Polyvinyl Chloride 372

Michels, G., E. Sittler, and P. Zetlin (Czechoslovakia). Degradation of Poly- $\epsilon$ -Caprolactam as a Result of Exchange Reaction Between Alkyl Bonds 380

Němec, M., J. Jílek, and M. Jílek (Czechoslovakia). Neutralization of Radical Catalyst in Polydimethylsiloxane: Effect of Thermal Neutralization on the Thermal Stability of the Polymer 399

Omori, A., O. Mijoshi, and I. Sifani (Czechoslovakia). Thermooxidative Degradation of Polyethers. Study of Degradation Reactions for Different Types of Linear Polyethers 405

Korshak, M. B., B. M. Kuznetsov, L. I. Golubenko, A. S. Serbikov, V. V. Levantovskaya, and M. N. Kuznetsov (USSR). On the Degradation and Stabilization of Some Polymeric Acetals 414

Amert, P. G., and A. S. Razuminski (USSR). Investigation of the Efficiency of Inhibitors of Rubber Oxidation at Various Temperatures 423

Pravednikov, A. I., and Yang Wen-kang (USSR). Mechanism of the Protective Action of Benzene Rings During the Radiolysis of Polystyrene 433

Zdanov, A. A., and K. A. Andrianov (USSR). On the Hydrolytic Stability of Side Groups in Polymers With Inorganic Chains of Molecules 440-45

Perlin, A. A., Ye. A. Fomkova, and G. I. Volkova (USSR). Mechanicochemical Transformations and Block Copolymerization During the Freezing of Starch Solutions 334

Umanov, Kh. T., B. I. Akhmedzhayev, and M. Azizov (USSR). Modification of the Properties of Cellulose by Grafting 344-73

YUR'YEV, V.M.; ROL'BEYN, L.; OL'KHOVSKIY, A., obshchestvennyy inspektor po  
okhrane truda; BUZNITSKIY, V.A., inzh.-kontroler

Readers' letters. Bez.truda v prom. 6 no.1:36 Ja '62. (MIRA 15:1)

1. Uchastkovyy gornotekhnicheskii inspektor Kuybyshevskoy rayonnoy gornotekhnicheskoy inspeksii, Donetskogo okruga (for Yur'yev).
2. Glavnyy inzh. UM-79 tresta 19, g. Minsk (for Rol'beyn).
3. Upravleniye Krivorozhskogo okruga Gosgortekhnadzora USSR (for Buznitskiy).

(Industrial safety)

YUR'YEV, V.M.; TELESHOVA, A.S.; APTEKAR', Ye.L.; ARDASHNIKOV, A.Ya.;  
REZNIKOVA, O.Ya.; PRAVEDNIKOV, A.N.

Use of ion-sorption ESh-1 pumps in the MI-1305 mass-spectrometer.  
Zav.lab. 30 no.3:375-376 '64. (MIRA 17:4)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni  
Karpova.

YUR'YEV, V. K.

А. В. Бродский, А. Н. Аносов, В. Н. Мухомов,  
А. Р. Соловьев

Образование электротехнических устройств для измерения электрических величин в диапазоне 0,15-10 Гц.

А. Д. Соловьевский,  
В. А. Югов,  
В. Н. Кривошеин,  
А. Н. Дроздов

Измерение ёмкостных параметров для измерения мощности СВЧ.

А. Н. Маликов

Оптимальные параметры радиоприёма.

Н. В. Михайлов

О коррелированных электрических параметрах сигнала в диапазоне 3-30 МГц.

В. С. Бродский

Метод калибровки и контроля электрических параметров в диапазоне от 10 до 20 МГц.

19 страниц  
(с 10 до 23 часов)

10

Г. А. Ефремов,  
Е. В. Заварзин,  
В. С. Копылов

Метод измерения электрических параметров антенн в радиотехнической системе связи.

Н. Р. Голуб, В. Н. Югов

Устройство для измерения спектра сигнала в радиотехнической и радиотехнической системе.

В. Н. Югов,  
В. Н. Югов

Измерение радиотехнических параметров сигнала в радиотехнической системе связи.

А. Н. Бродский

Техника измерения СВЧ с помощью фотодиодов и полупроводников.

11 страниц  
(с 10 до 16 часов)

А. Н. Бродский

Методы измерения радиотехнических параметров сигнала в радиотехнической системе связи.

11

report submitted for the Centennial Meeting of the Scientific Technological Society of  
Radio Engineering and Electrical Communications in A. S. Popov (VSEK), Moscow,  
8-12 June, 1959

YUR'YEV, V.N., starshiy inzh.-tekhnolog

Scientists are helping the workers. Elek.i tepl.tiaga 5  
no.9:32 S '61. (MIRA 14:10)

1. Lokomotivnoye depo imeni Il'icha Moskovskoy dorogi.  
(Railroads--Repair shops) (Railroads--Employees)

YUR'YEV, V.N., starshiy tekhnolog; SAVCHENKO, I.T., starshiy teplotekhnik

We received the TBM2 diesel locomotive. Elek.i tepl.tiaga  
6 no.4:6 Ap '62. (MIRA 15:5)

1. Lokomotivnoye depo im. Il'icha, Moskva (for Yur'yev).  
(Diesel locomotives—Testing)



YUR'YEV, V.N., starshiy inzh.-tekhnolog; BROVKIN, M.N., starshiy tekhnik

Cleaning of woolen fuel filter plates. Elek. i tepl. tiaga 6  
no.11:24 N '62. (MIKA 16:1)  
(Diesel locomotives--Fuel systems)

YUR'YEV, V.S.

Automatic submerged arc welding units for vertical cylinders.  
Proizv. opyt v obl. svar. no.1:69-71 '56. (MLRA 9:10)

(Cylinders--Welding) (Electric welding)

SOV/137-59-2-3118

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 2, p 119 (USSR)

AUTHORS: Yur'yev, V. S., Pisarev, L. Ya.

TITLE: An Automatic Arc-welding Unit for Welding of Flanges (Elektrosvarochnyy avtomat dlya privarki flantsev)

PERIODICAL: Byul. tekhn. ekon. inform. Sovnarkhoz Rostovsk. ekon. adm. r-ra, 1958, Nr 4, pp 25-26

ABSTRACT: Developed by the design department of the Taganrog "Krasnyy Kotel'shchik" ["Red Boilermaker"] plant, the automatic welding machine described is designed for welding of flanges to various cylindrical articles. The operating characteristics of the unit are as follows: Maximum diameter 1600 mm; minimum diameter 200 mm; thickness of wall 10-30 mm; maximum length 6000 mm; speed of welding 10-30 m/hr. The welding head is identical to that employed on the UT-2000 automatic welding machine equipped with a traveling mechanism. The speed of welding can be controlled continuously, the face plate may be rotated through an angle of 90°. The electric current is supplied to the welding head through a cable from a transformer of the STD-1000 type. Annular surfacing of flat areas may be performed with this welding unit.

N. K.

Card 1/1

YUR'YEV, V.S.

Unit for flame and mechanical pipe cleaning. Biul.tekh.-ekon.-  
inform.Gos.nauch.-issl.inst.nauch.i tekhn.inform. 16 no.7:36-38  
'63. (MIRA 16:8)

(Pipe—Cleaning)

1. Title: Search for H<sup>+</sup> nuclei

2. Author(s): Beit, A. A. G. and Yurlov, V. V. and Portelany, S. M.

3. Title: An attempt to discover the H<sup>+</sup> nuclei among the carbon fission products  
by the action of fast neutrons

4. Period: 1971, April 15, 1971, 1971, 1971

5. Summary: Experiments were conducted to discover the H<sup>+</sup> nuclei among the carbon fission products, separated by means of a fast neutron beam. A fast neutron beam of 1.5 MeV was used to irradiate the carbon fission products. The fast neutrons were used to excite the nuclei of the fission products. The fast neutrons were used to excite the nuclei of the fission products. The fast neutrons were used to excite the nuclei of the fission products.

6. Indexing: Search for H<sup>+</sup> nuclei

7. Reference: Search for H<sup>+</sup> nuclei, 1971, 1971, 1971, 1971

YURYEV, V.V. (Asst. Prof.)

"On the Problem of Producing Goods and the Law of Cost under Socialism."

report presented at the 13th Scientific Technical Conference of the Kuybyshev Aviation Institute, March 1959.

S/057/63/033/002/012/023  
B108/B186

AUTHORS: Bel'skiy, S. A., Myakinin, Ye. V., Petrov, A. M.,  
Romanov, A. M., and Yur'yev, V. V.

TITLE: The energy transfer to the wall of the discharge chamber in  
the "Alpha" machine

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 2, 1963, 212 - 213

TEXT: The energy was measured with integral-type semiconductor and wire bolometers connected to a measuring bridge. The vacuum in the hydrogen plasma was  $5 \cdot 10^{-5}$  -  $2 \cdot 10^{-3}$  mm Hg. The energy measured by the detectors rises monotonically with the voltage at the discharge capacitor battery. This dependence is slightly less than in accordance with a square law. Experiments with scintillation and boron counters and with a  $\text{CaSO}_4$ -Mn thermo-luminophor showed that the energy transferred to the wall by short-wave electromagnetic radiation is not more than 10% of the plasma energy. A larger part of energy lost to the walls must be due to other processes (neutral particles; ZhTF, 30, 12, 1419, 1960).

SUBMITTED: April 9, 1962  
Card 1/1

UR/0048/65/029/010/1942/1945

Yur' V. V. Myakulin, Ye. V.; Romanov, A. M.; Shalak, N. I.; Yur' V.

**TITLE:** Investigation of low-energy charged particles with the Cosmos 12, 13, and Elektron 2 satellites. The 1st International Conference on Cosmic Ray Physics, Moscow, 1964.

**ORIGIN:** In SSSR. Izvestiya. Seriya fizicheskaya. Vol. 20, no. 1, 1965, 1942-1945.

**SYNOPSIS:** The authors have measured slow and fast neutron fluxes in the atmosphere of the Earth from the Cosmos 12 and Elektron 2 satellites. The fast neutron flux was measured with a scintillation counter connected to a Geiger-Müller tube. The slow neutron flux was measured with a scintillation counter connected to a Geiger-Müller tube. The scintillation counter was surrounded with plastic scintillator. The Geiger-Müller tube was surrounded with plastic scintillator. The scintillation counter was surrounded with plastic scintillator. The Geiger-Müller tube was surrounded with plastic scintillator.





1. 20 12-56  
ACCESSION NR: AP5026236

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ENCLOSURE 00  
TOTAL 000

SUB CODE: NP ES  
7, 20

YEFIMOV, Yu.Yo.; MYAKININ, Ye.Ye.; ROMANOV, A.M.; SHOLAK, N.I.; YURIEV, V.V.

Some results of neutron measurement in the atmosphere. Izv. AN  
SSSR.Ser.fiz. 20 no.10:1942-1945 0 165.

(MIRA 18:10)

YUR'YEV, V.YA.

25820. YUR'YEV, V. YA. Semenovodstvo rzhn khar'kovskoy 194. Seleksiya i  
semenovodstvo, 1949, № 8, S. 7-11

SO: Letopis' Zhurnal'nykh Statey Vol. 34, Moskva 1949

YUR'YEV, V. Ya.

MULYARCHUK, S.O.; YUR'YEV, V. Ya., diyenny chlen.

Prospective use of glutinous alfalfa (*Medicago glutinosa* M.B.) for selection.  
Dop. AN URSR no. 6:463-466 '52. (MLBA 6:10)

1. Akademiya nauk Ukrayins'koyi RSR (for Yur'yev). 2. Nizhyns'kyi derzhavnyy  
pedagogichnyy instytut im. M.V. Hoholya (for Mulyarchuk). (Alfalfa)

YUR'YEV, V. Ya.

"The principal problems of wheat selection."

reported at Conference on Problem of Heredity and Variability, held at  
Institute of Genetics, AS USSR, 8-14 Oct 1957  
Vestnik AN SSSR, 1958, Vol. 28, No. 1, pp. 127-129 (author Kushner, Kh. F.)

USSR / Cultivated Plants. Cereal Crops.

M-3

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 58508  
Author : Yur'yev, V. Ya.  
Inst : Khar'kov University  
Title : Principal Trends in the Selection of Grain Crops  
Orig Pub : V sb.: Vopr. metodiki selektsii pshenitsy i kukuruzy,  
Khar'kov. Un-t, 1957, 5-10

Abstract : No abstract given

Card 1/i

16

YUR'YEV, V.Ya.

[General breeding and seed production of field crops] Obshchaya  
seleksiya i semenovodstvo polevykh kul'tur. 3., perer. izd.  
Moskva, Gos. izd-vo selkhoz. lit-ry, 1958. 344 p. (MIRA 11:10)  
(Field crops)



VLASYUK, P.A., akademik, otv.red.; YUR'YEV, V.Ya., akademik, zam. otv.  
red.; BUZANOV, I.F., akademik, red.; DANILENKO, I.A., red.;  
DELOHE, L.N., doktor biolog.nauk, red.; KUCHUMOV, P.V., doktor  
sel'skokhoz.nauk, red.; POLYAKOV, I.M., red.; STRONA, I.G.,  
kand.sel'skokhoz.nauk, red.; TKACHENKO, F.A., kand.sel'skokhoz.  
nauk, red.; CHIZHENKO, I.A., kand.ekonom.nauk, red.; LESOVICHENKO,  
Ya.V., red.; MANOYLO, Z.T., tekhn.red.

[Vegetables and potatoes; works of scientific session, No.2]  
Ovoshchnye kul'tury i kartofel'; trudy nauchnoi sessii, vypusk 2.  
Kiev, Izd-vo Ukrainskoi Akad.sel'khoz.nauk, 1960. 132 p.

(MIRA 14:1)

1. Ukrainskiy ordena Lenina nauchno-issledovatel'skiy institut  
rasteniyevodstva, selektsii i genetiki. 2. Chlen-korrespondent  
Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina  
(for Danilenko). 3. Chlen-korrespondent AN USSR (for Strona).  
(Vegetable gardening) (Potatoes)

VLASYUK, P.A., akademik, otv.red.; YUR'YEV, V.Ya., akademik, zam.otv.red.;  
BUZANOV, I.F., akademik, red.; DANILENKO, I.A., red.; DELONE,  
L.N., doktor biolog.nauk, red.; KUCHUMOV, P.V., doktor sel'skokhoz.  
nauk, red.; POLYAKOV, I.M., red.; STRONA, I.G., kand.sel'skokhoz.  
nauk, red.; TEACHENKO, F.A., kand.sel'skokhoz.nauk, red.;  
CHIZHENKO, I.A., kand.ekonom.nauk, red.; BLANINA, L.F., red.;  
VIDONYAK, A.P., khud.-tekhn.red.

[Problems in improving the quality of agricultural products; pro-  
ceedings of the scientific session] Voprosy uluchsheniia ka-  
chestva sel'skokhoziaistvennoi produktsii; trudy nauchnoi sessii.  
Kiev, Izd-vo Ukrainskoi Akad.sel'khoz.nauk. No.4. [Feeds and  
livestock products] Korma i produkty zhivotnovodstva. 1960. 143 p.  
(MIRA 14:1)

1. Ukrainskiy ordena Lenina nauchno-issledovatel'skiy institut  
rasteniyevodstva, selektsii i genetiki. 2. Chlen-korrespondent Vse-  
soyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina i  
Ukrainskoy akademii sel'skokhozyaystvennykh nauk; Nauchno-issledo-  
vatel'skiy institut zhivotnovodstva Lesostepi i Poles'ya USSR (for  
Danilenko). 3. Chlen-korrespondent AN USSR (for Polyakov).
4. Ukrainskiy ordena Lenina nauchno-issledovatel'skiy institut raste-  
niyevodstva, selektsii i genetiki (for Strona).  
(Feeds) (Stock and stockbreeding)

YUR'YEV, V.Y., [Iur'iev, V.IA.], akademik, dvazhdy Geroy Sotsialisticheskogo Truda; PAKHOMOVA, V.P., kand.ekonom.nauk

Winter hardiness of certain rye varieties. Visnyk sil'hosp.nauky 4.  
no.8:21-24 Ag '61. (MIRA 14:7)

1. Ukrains'kiy ordena Lenina naukovo-doslidniy institut roslinnitstva,  
selektsii i genetiki.  
(Rye) (Plants--Frost resistance)

YUR'YEV, V.Ya., otv. red. ~~[Sopredsed.]~~; STRONA, I.G., kand. sel'khoz. nauk, zam. otv. red.; VOL'F, V.G., red.; POLYAKOV, I.M., red.; LAPTSEVICH, G.P., red.; KIREYEV, F.N., red.; FOXID'KO, A.I., red.; POTOTSKAYA, L.A., tekhn. red.

[Scientific problems in seed production, the study and the inspection of seeds] Nauchnye voprosy semenovodstva, semenovedeniya i kontrol'no-semennogo dela; sbornik materialov. Kiev, Izd-vo Ukr. akad. sel'khoz. nauk, 1962. 203 p. (MIRA 16:5)

1. Soveshchaniye po organizatsii nauchno-issledovatel'skoy raboty v oblasti semenovodstva, semenovedeniya i kontrol'no-semennogo dela. Kharkov, 1961. 2. Ukrainskiy nauchno-issledovatel'skiy institut rasteniyevodstva, selektsii i genetiki (for Strona). (Seed industry)

YUR'YEV, Ya.M., inzh.; KORSHUNOV, V.A., inzh.; OBODOVSKIY, A.A., tekhnik

Improvement of devices in the interior of TP-230-2 boiler drums.  
Energetik 9 no.8:1-5 Ag. '61. (MIRA 14:8)  
(Boilers)

YE. A. YUR'YEV

Rol' Sibiri V Ekonomike Sel'skogo Khozyaystva Strany  
(by) I. G. Mishchenko (1) Ye. A. Yur'yev. Moskva, Ekonomizdat, 1961.

228 P. Tables.

*Yur' yev, Yu.*

AUTHOR: Yur'yev, Yu.

27-12-12/27

TITLE: In the Fields of the Krasnoyarsk Kray (Na polyakh Krasnoyarskogo kraya)

PERIODICAL: Professional'no - Tekhnicheskoye Obrazovaniye, 1957, # 12, p 17 (USSR)

ABSTRACT: The article states that more than 7,000 students of the Labor Reserves' agricultural mechanization schools had been working this fall on the Sovkhoz fields of the Krasnoyarsk Kray bringing in the rich harvest. They arranged a competition for the best results obtained, and the article gives some particulars mentioning the names of the most successful men.

AVAILABLE: Library of Congress

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SUBMITTED: September 1, 1962

YUR'YEV, Yu. I., Cand tech Sci -- (diss) "Effect of the degree of rolling on the rigidity of frame saws." Minsk, 1960. 12 pp; (Ministry of Higher, Secondary Specialist, and Professional Education, Belorussian SSR, Belorussian Forestry Engineering Inst in G. M. Sholokhov St, Minsk, 1960; (M., 1960, 1960)

LAPIN, P.I.; KONDRATOVICH, N.Ye.; YUR'YEV, Yu.I.; ANTSIFEROVA, T.S.; GERNET, G.M.; POTOLOVSKIY, N.I., red.; MEL'NIKOVA, M.S., red. izd-va; PARAKHINA, N.L., tekhn. red.

[Manual on the assembly, operation, maintenance and repair of the equipment of sawmills and woodworking enterprises] Spravochnik po montazhu, ekspluatatsii i remontu oborudovaniia lesopil'nykh i derevoobrabatyvaiushchikh predpriatii. Moskva, Goslesbumizdat, 1961. 443 p.

(MIRA 14:11)

(Woodworking machinery) (Sawmills--Equipment and supplies)

YUR'YEV, Yu.I., kand.tekhn.nauk; GERNET, G.M., inzh.

New developments in the field of circular saws. Der.prom. 10 no.5:  
14-15 My '61. (MIRA 14:5)

1. Arkhangel'skiy lesotekhnicheskii institut im. V.V.Kuybysheva.  
(Circular saws)

LAPIN, Petr Ivanovich; KONDRATOVICH, Nikolay Yemel'yanovich; YUR'YEV,  
Yuriy Ivanovich; ODINTSOVA, L.I., red.; MART'YANOVA, L.I.,  
tekhn. red.

[Design and use of modern frame saws] Konstruktsii i eksplu-  
atatsiia sovremennykh lesopil'nykh ram. Arkhangel'sk,  
Arkhangel'skoe knizhnoe izd-vo, 1962. 82 p.

(MIRA 16:12)

(Saws)

YURYEV, Yu. K. 22

Chemical nature of gasoline from the Ural and its catalytic aromatization. N. D. Zaitseva and Yu. K. Yuryev. *Dokl. Akad. Nauk SSSR*, 1950, 151, 61. Saponins were removed by means of NaOH and HCl, and distn. was carried out over freshly reduced Cu. Aromatics were detd. by dissolving them in H<sub>2</sub>SO<sub>4</sub> contg. 7-10% SO<sub>3</sub>. The remaining cyclic hydrocarbons were dehydrogenated by passing them at a rate of 6-7 drops per min. through a tube 1 x 60 cm. held at 300-310° and filled with platinumized C (30% Pt). The total yield of aromatics was thereby increased to 60%. Gasoline from Sarakhanul contained no aromatics, but 40% of it could be converted into aromatics by dehydrogenating cyclic hydrocarbons. Aromatics thus obtained can be nitrated without further purification. Hydrocarbons not affected by the dehydrogenation process are said. aliphatic hydrocarbons (C 84.23, 84.40%, H 16.72, 15.60%). V. Kalichman

ASB-SLA REFERENCE LITERATURE CLASSIFICATION

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PROCESSES AND PATENTING MUST  
LIST AND TWO OTHERS

The constitution of Ural petroleum (Petrov, N. D. Zelinikii and Yu. K. Yur'ev, *Brennstoff-Chem.* 14, 347-9(1933); cf. C. A. 25, 4112 and Sakhanov, *et al.*, part VI of preceding abstr.--Analytical data for 6 fractions between 160° and 240° are tabulated. Aromatic compds. were detd. by both the  $H_2SO_4$  and the aniline-point methods with different results. Hydroaromatic compds. were detd. as aromatic compds. after catalytic dehydrogenation. Paraffins and naphthene hydrocarbons were detd. by the Carpenter naphthene no. and the aniline point. Aromatic compds. were highest in the 150-200° fraction. Hexahydroaromatic compds. were the same throughout the fractions. Other polymethylene cyclic and paraffin hydrocarbons increased with h. p. Mono-substituted  $C_{10}$  derivs. were found only in the 225-240° fraction; all the disubstituted benzenes were o-derivs. Naphthalene hydrocarbons were found neither in the aromatic compds. nor the dehydrogenated hydroaromatic compds. in contrast to the results with Bakou oils. W. Jung

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

22

Chemical properties of petroleum from Sterlitamak.  
N. D. Zelinskii and Yu. K. Yur'ev. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat.* 1934, 135-9 (in English, 139-40). -- Sterlitamak crude oil ( $d_{4}^{20}$  0.890) is a S crude oil (2.43% S) contg. paraffins, naphthenes and aromatic compds. After removal of S compds. with Hg salts (mercaptans and disulfides present, thiophene and its derivs. absent), 6 fractions between 60° and 300° were investigated for their content of aromatic compds. (H<sub>2</sub>SO<sub>4</sub> and aniline methods), hydroaromatic compds. (dehydrogenation with Pt (cf. C. A. 6, 598; 7, 2224; 17, 2567; 18, 244, 2992, 3184)), naphthenes (calcd. by the method of Sakhanov, C. A. 28, 295-6) and paraffins (by difference). Naphthalene derivs. were absent. High-boiling fractions were found to be similar in chem. compn. to those of Perm crude oil (C. A. 28, 299) but gasoline and kerosene fractions contained a smaller amt. of aromatic compds. Nevertheless, removal of aromatic compds. and S compds. in refining kerosene cannot be avoided.

V. A. Kallchevsky



EST AND PRO GROUPS										PROCESSES AND PROPERTIES INDEX										IND. AND AT- GROUPS									
<p><i>Ca</i></p> <p><b>Dr. D. Zolotarev and his scientific activities. R. Ya. Izrael and Yu. K. Yur'ev. J. Chem. Ind. (Moscow) 1955, No. 3, 28-37. H. M. Leicester</b></p> <p><i>2</i></p>																													
<p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																													

10

PROCESSING AND PREPARATION NOTES

The mechanism of the action of aluminum chloride on biphenyl. Yu. E. Yur'ev and R. Ya. Levina. *Uchenye Zapiski (Vys. Ser. Math. Nauk-Ukr.)* 2, 203-7 (1964); Chem. Abstr. 1965, 11, 3563. Products obtained from the cracking of biphenyl at 250-300°C in the presence of AlCl<sub>3</sub> are predominantly benzene (72.6%) as well as methylcyclopentane (18.3%), toluene (4%), cyclohexane (4%). Paraffins and olefins were not formed.

W. A. Moore

AS 4.5.4 METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

12

Catalytic hydrogenation of the homologs of pyrrole and dehydrogenation of their tetrahydro derivatives. Yu. K. Var'ev and P. F. Shcheg'yan. *J. Gen. Chem. (U.S.S.R.)* 4, 1238-41 (1934); cf. Zelinskii and Var'ev, *C. A.* 24, 1110; 25, 2997. — *N*-Methylpyrrole, *b.m.* 112-3°, *n<sub>D</sub><sup>20</sup>* 1.467, *d<sub>4</sub><sup>20</sup>* 0.9090; *N*-ethylpyrrole (I), *b.m.* 120-30°, *n<sub>D</sub><sup>20</sup>* 1.4613, *d<sub>4</sub><sup>20</sup>* 0.9005, and *N*-propylpyrrole (II), *b.m.* 146.5-7.5°, *n<sub>D</sub><sup>20</sup>* 1.4773, *d<sub>4</sub><sup>20</sup>* 0.8833, were obtained from C<sub>12</sub>H<sub>11</sub>NK and the alkyl halides by the method of Okko (*C. A.* 9, 73) and then hydrogenated by the method of Sabatier and Senderens. Of the 3 catalysts used, Os-asbestos failed to catalyze the reaction, Pt-C gave very poor results with a rapid poisoning of the catalyst, while Pd-asbestos at 160° gave good results. The hydrogenation was in each case continued until the product showed a const. *n*. The synthesized bases were identified by converting into the picrates and crystal. from abs. alc. to a const. m. p. *N*-Methylpyrrolidine, *b.m.* 80-1°, *n<sub>D</sub><sup>20</sup>* 1.4311, *d<sub>4</sub><sup>20</sup>* 0.8184, *M. D.* 27.13 (found), *M. D.* 27.19 (calcd.); picrate, m. 224°. *N*-Ethylpyrrolidine (III), *b.m.* 103.5-4.5°, *n<sub>D</sub><sup>20</sup>* 1.4382, *d<sub>4</sub><sup>20</sup>* 0.8160, *M. D.* 31.76 (found), *M. D.* 31.8 (calcd.); picrate, m. 186°. *N*-Propylpyrrolidine (IV), *b.m.* 127-8.5°, *n<sub>D</sub><sup>20</sup>* 1.4389, *d<sub>4</sub><sup>20</sup>* 0.8171, *M. D.* 30.62 (found), *M. D.* 30.37 (calcd.); picrate, m. 101°. The law *n* obtained by different investigators for these compounds, is caused by contamination with fatty amines formed by the decomposition of the pyrrole ring. III dehydrogenated by the method of Zelinskii at 290° with the Pd-asbestos catalyst gave I and some  $\alpha$ -ethylpyrrole. IV treated at 270° as above gave pure II. Chas. Blanc

ASAC-11A METALLURGICAL LITERATURE CLASSIFICATION

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COMMON ELEMENTS										PROCESSING AND PROPERTIES INDEX										CLASSIFICATION									
MATERIALS INDEX										CLASSIFICATION										CLASSIFICATION									
<p><i>la</i></p> <p>Kinetics of the catalytic dehydrogenation of dimethylcyclohexane. A. A. Balandin and Yu. K. Yur'ev. J. Phys. Chem. (U. S. S. R.) 3, 367-406 (1934). The speed of the reaction on Ni and Al oxide catalysts was studied as a function of temp. and of the initial concns. of the dimethylcyclohexane (I)—xylene (II) mixts. (consisting in both cases of all three isomers). For all mixts. contg. 10-100% I the energy of activation from 200° to 350° is 14,700 cal. per mol. but falls to 12,400 in a 10% mixt. Methane formation is slight if I is pure. The rate of dehydrogenation of I is slightly greater than that of cyclohexane. The analyses were made by means of refractive indexes, which are practically a linear function of the compn. of the mixt. of I and II. F. H. Rathmann</p>										<p>2</p>										<p>1</p>									
<p>ASAC-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>RESEARCH AND DEVELOPMENT</p>										<p>RESEARCH AND DEVELOPMENT</p>									
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Survey of gas deposits in the Metallurg gas fields,  
lower Volga river. V. A. Sokolov and Yu. K. Yur'ev.  
*Nefteprom Khoeysino* 26, No. 1, 20-2 (1934).—The  
composition of gases obtained through drilling up to a depth  
of 100 m. and suction exercised by the difference in the  
water level in bottles placed on the ground was CO<sub>2</sub>  
1.5-3, O<sub>2</sub> 16.5-20.2, and hydrocarbons about 0.04%.  
The radioactivity of the gases was 0.62-1.88 divisions  
of the electrometer per min. A. A. Bochkovsk

1ST AND 2ND COLUMNS																										3RD AND 4TH COLUMNS																									
COMMON ELEMENTS																										COMMON VARIANTS																									
<p>Desulfurizing Sterlitamak gasoline with aluminum chloride. N. D. Zelinskii and Yu. K. Yur'ev. <i>Neftekhimicheskoye Khimicheskoye</i> 26, No. 9, 36(1934); <i>Foreign Petroleum Tech.</i> 3, 193-5(1935)(Translation).—It was possible to remove allyl sulfide, <i>nc</i>-heptyl sulfide and benzyl sulfide by treatment with 1-6% <math>AlCl_3</math>, and to lower the S content of the gasoline to 0.005%, by using only 1% <math>AlCl_3</math>. <i>n</i>-Heptyl sulfide, ethyl sulfide and ethyl disulfide are only slightly attacked by <math>AlCl_3</math>. A. A. Bochtling</p>																																																			
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Catalytic aromatization of benzene. N. D. Zefirovskii and Yu. K. Yur'ev. *Compt. rend. acad. sci. U. R. S. S.* 2, 225-7 (in German 237-9) (1975). Samples of benzene were passed over dehydrogenation catalysts (Pt on activated C at 310° or Ni on Al<sub>2</sub>O<sub>3</sub> at 300-2°) at 1 cc. per 5 min. and the increase in content of aromatic hydrocarbons in the benzene was detd. The increase varied with the source of the benzene from 25% for those originally high in aromatic hydrocarbons to 100% for those originally low in aromatic hydrocarbons. V. H. M.

ASAC-4 METALLURGICAL LITERATURE CLASSIFICATION

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Cracking of kerosene and gas oil from Perm crude oil in the presence of aluminum chloride. Yu. K. Yur'ev. *Nefteyane Khaz.* 1936, No. 2, 60-9.—The kerosene fraction contained 60% aromatic, 25% naphthene, 15% paraffin hydrocarbons and 2.4% S. The reaction started at 160° and was discontinued at 230-40°. The cracked distillate amounted to 53.5% and contained 4.25% of a "benzene" and 1.5% of a "toluene" fraction, calcd. on the original kerosene. The gas oil contained 66% aromatic, 23% naphthene, 12% paraffin hydrocarbons and 4.97% S. The cracked distillate started to boil at 230°, yielding about 32.5% of cracked distillate, which contained the same amount of "benzene" and "kerosene" fractions as the kerosene, in addn. to 0.26% S. The cracked fractions, because of their high content in aromatic hydrocarbons, can be directly nitrated. Nineteen references.

A. A. Boettling

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION



*Cu*

27

Modification of chemical composition of Suruchani petroleum in migrating from deep to shallow deposits. Yu. K. Yur'ev. *Sov. Repts. Moscow State Univ.* 1916, No. 6, 260-71.—The d. of petroleum obtained from surface deposits in 1900 was more than that of petroleum now obtained. Chemical composition of Kala petroleum. Yu. K. Yur'ev and I. A. Musaez. *Ibid.* 273-5.—Analytical data are recorded. B. C. A.

ASH-SL-6 REFALLURGICAL LITERATURE CLASSIFICATION

**Catalytic dehydrogenation of trans-decahydroquinoline.**  
Yu. B. Yan'ev and G. I. Mironenko. *Sov. Exptl. Chem.*  
**June 1960, No. 6, 277-8.** Uridine is obtained in  
high yield by means of catalytic dehydrogenation in presence of C  
Pt catalyst at 400°C.

ASME-11A - METALLURGICAL LITERATURE CLASSIFICATION

**CIA-RDP86-00513R001963220012-5"**

[illegible]

PROPERTIES AND CHARACTERISTICS

The action of aluminum chloride on bicyclohexyl.  
Yu. K. Vor'ev, R. Ya. Levina and A. I. Kudryavtsev.  
J. Gen. Chem. (U. S. S. R.) 6, 1700-6 (1935); cf. C. A.  
38, 8191. Cracking bicyclohexyl (I) at 160-200° in the  
presence of  $AlCl_3$  gives a product, b. 15-135°, contg. cyclo-  
hexanes 32, cyclopentane 12.5 and methane hydrocarbons,  
b. 63-65°. The latter are composed of 41% isopentane, b.  
16-32°. Aromatic compounds and olefins are not formed.  
I results in nearly 100% yield from recryst. bicyclohexyl, m.  
71°, by hydrogenating it in the presence of Ni (60°C) on  
 $Al_2O_3$  (Zelinskii and Komarovskii, C. A. 18, 2885) at an  
initial temp. of 100° and 90 atm. The exothermic reac-  
tion is regulated at 160° by addn. of  $H_2$  every 15-20 min.  
The results depend on energetic stirring (300 r. p. m.) of  
the reaction mixt. Chas. Blanc



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10

The cracking of decahydroanthracene in the presence of anhydrous aluminum chloride. M. Ya. Levina, Yu. K. Yurev and A. I. Iashkinnolukov. *J. Gen. Chem.* (U. S. S. R.) 7, 1005 (1937).—The cracked product contains 16-35% aromatic hydrocarbons, 64-77% naphthalenes and a small amt. of paraffins. This shows that when double bonds occur in 6-membered rings,  $AlCl_3$  cracking can produce aromatic compounds. H. M. L.

ASS-56A METALLURGICAL LITERATURE CLASSIFICATION

RESEARCH DIVISION

RESEARCH DIVISION

RESEARCH DIVISION

Cracking bicyclopentyl in the presence of anhydrous aluminum chloride. Vukobratovic, R. V., Levina and M. I. Spector. J. Gen. Chem. (U. S. S. R.) 7, 1581 d (1937); cf. C. A. 31, 2173. Cracking bicyclopentyl under the conditions previously used gives 35.5% hexamethylene compounds, 40.0% pentamethylene and 18.5% paraffin hydrocarbons. The pentamethylene ring is more stable toward splitting by  $AlCl_3$  than the hexamethylene ring, but it is less stable toward isomerization. The higher homologs of cyclopentane are more easily isomerized to cyclohexyl derivs. than is methylcyclopentane.

W. M. Leicester

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

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Catalytic transformations of heterocyclic compounds.  
 VII. Transformation of tetrahydrofuran (furanidine) into  
 pyrrolidine and thiophane. Yu. A. Yur'ev and M. N.  
 Prukina. *J. Gen. Chem. (U. S. S. R.)* 7, 1848-71 (1937);  
 cf. C. A. 31, 13091. When tetrahydrofuran is passed  
 over  $Al_2O_3$  at  $400^\circ$  with  $NH_3$  it gives 43% pyrrolidine.  
 If  $H_2S$  replaces  $NH_3$ , it gives 67% thiophane. These re-  
 actions occur more easily than the corresponding ones  
 with furan, but the mechanism is probably the same.  
 H. M. Leicester

ALUM. SLA METALLURGICAL LITERATURE CLASSIFICATION



**Catalytic transformations of heterocyclic compounds. VIII. Transformation of tetrahydrofuran (furanidine) into *N*-arylpiperidines.** Yu. K. Yur'ev and G. A. Minikina. *J. Gen. Chem.* (U. S. S. R.), 7, 2045 (1937); cf. C. A. 32, 5481. When tetrahydrofuran with 2 mols. of a primary aromatic amine is passed over  $AlCl_3$  in a H. current at 400° it gives *N*-aryl-substituted piperidines. *N*-Phenylpiperidine (63.5% yield), b. 107°, d<sub>4</sub><sup>20</sup> 1.0178, n<sub>D</sub><sup>20</sup> 1.581, M. R. 48.17 (calcd. 48.31), exaltation 1.60; picrate, m. 115°. The product purified by means of  $CaH_2/SaCl_2$  showed practically the same M. R. This mol. exaltation cannot thus be ascribed to any impurities, but is probably caused by the presence of a substituted amino group combined with the C atom of the  $CaH_2$  ring. Such a discrepancy between the found and calcd. mol. refractions was observed in disubstituted amines by Brühl (*Phys. Chem.* 16, 218). *N*-o-Tolylpiperidine (63.4% yield), b. 103-4°, d<sub>4</sub><sup>20</sup> 0.9851, n<sub>D</sub><sup>20</sup> 1.5658, M. R. 52.04, exaltation 1.5; picrate, m. 101.5-2°. *N*-p-Tolylpiperidine (52.7% yield), b. 126-7°, m. 41.5°, d<sub>4</sub><sup>20</sup> 0.9728, n<sub>D</sub><sup>20</sup> 1.5583, M. R. 53.42, exaltation 2.25; picrate, m. 111°. Cyclohexylamine, b. 132-4°, obtained from PhNH<sub>2</sub> with H at 125° and 60 atm. in the presence of Ni on  $Al_2O_3$  (cf. C. A. 31,

21731), gave 62.0% *N*-cyclohexylpyrrolidine, b<sub>p</sub> 70°, d<sub>4</sub><sup>20</sup> 0.9135, n<sub>D</sub><sup>20</sup> 1.4845, M<sub>r</sub> 181.48 (calcd. 174.22); picrate, m. 104.5°. Twelve references. IX. Synthesis of 1,2-diaubstituted pyrroles. Yu. K. Vur'ev, *Izv. S. S. S. R. Akad. Nauk*, 116:19.

--α-Methylfuran in 3 mols. of a primary acrylamine when passed at the rate of 15 drops per min. over Al<sub>2</sub>O<sub>3</sub> at 475° in a II current gave 1-aryl-2-methylpyrrole. Because of a partial decoupling, the yields of the latter are considerably lower than those of *N*-arylpyrroles similarly obtained from furan (cf. C. A. 30, 8267). 1-Phenyl-2-methylpyrrole (10% yield), b<sub>p</sub> 118-119°, d<sub>4</sub><sup>20</sup> 1.044, n<sub>D</sub><sup>20</sup> 1.522, M<sub>r</sub> 160.7 (calcd. 160.2). 1-*n*-Tolyl-2-methylpyrrole (10% yield), b<sub>p</sub> 111.5-113°, d<sub>4</sub><sup>20</sup> 1.0385, n<sub>D</sub><sup>20</sup> 1.5166, M<sub>r</sub> 155.23 (calcd. 154.82). *p*-Isomer (10% yield), b<sub>p</sub> 110-111°, d<sub>4</sub><sup>20</sup> 1.0372, n<sub>D</sub><sup>20</sup> 1.5088, M<sub>r</sub> 155.8. These new pyrrole derivatives color pine shavings red-violet, do not react with K in ligroin and when oxidized do not give ReO<sub>3</sub>H and *o*- and *p*-phthalic acid, resp.; this shows that the aryl radical is not connected with the C atom of the pyrrole ring. C. R.

## 4.14.1.1 METALLURGICAL LITERATURE CLASSIFICATION

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Chemical composition of Changhytsch petroleum.  
Yu. K. Yul'ev and V. M. Kotelnikova. *Neftepromysh.*  
18, No. 8, 47-8 (1937); *Chimia & Industrie* 19, 1088.  
This crude oil can be considered as a light petroleum;  
it gives 21.7% of fractions distg. below 300°. The solid  
paraffin content is only 0.51% and the S content 0.317%.  
Changhytsch petroleum is closely related to Gromy  
nonparaffinic petroleum, but has a peculiarity in the  
naphthene content of the motor-gasoline fraction: the  
heptahydroaromatic hydrocarbon content of the 95-122°  
fraction is 4 times that of the 04-105° or the 122-140°  
fraction. A. Papiernik-Coutin.

Catalytic transformations of heterocyclic compounds.  
 X. Synthesis of *N*-substituted pyrroles, *N*- and *N*-substituted pyrrolidines and  $\alpha$ -methylthiophene. Yu. K. Yur'ev. *J. Gen. Chem. (U. S. S. R.)* 5, 1034-8 (in English, 1938)(1938); cf. C. A. 32, 6309. Reaction of  $\alpha$ -substituted tetrahydrofurans with  $\text{NH}_3$  and primary aliphatic amines in the presence of  $\text{Al}_2\text{O}_3$  at 400-450° gives  $\alpha$ -substituted pyrrolidines and with  $\text{H}_2\text{S}$  under the same conditions  $\alpha$ -substituted thiophenes.  $\alpha$ -Methyltetrahydrofuran (I) with  $\text{NH}_3$ ,  $\text{MeNH}_2$  (II) and  $\text{EtNH}_2$  (III) gives, resp.,  $\alpha$ -methylpyrrolidine (27% yield), *b.p.* 104-4.5°,  $n_D^{20}$  1.4372,  $d_4^{20}$  0.8307; *N*- $\alpha$ -dimethylpyrrolidine (34.5% yield), *b.p.* 96-7°,  $n_D^{20}$  1.4252,  $d_4^{20}$  0.7994; and *N*-ethyl- $\alpha$ -methylpyrrolidine (28% yield), *b.p.* 110-20°,  $n_D^{20}$  1.4323,  $d_4^{20}$  0.8028. I with  $\text{H}_2\text{S}$  gives  $\alpha$ -methylthiophene (60% yield), *b.p.* 101.2-1.5°,  $n_D^{20}$  1.4022,  $d_4^{20}$  0.8541. Tetrahydrofuran with II gives *N*-methylpyrrolidine (35.5% yield), *b.p.* 79.5-0.8°,  $n_D^{20}$  1.4292,  $d_4^{20}$  0.8028, and with III *N*-ethylpyrrolidine (50.5% yield), *b.p.* 104.5-5.5°,  $n_D^{20}$  1.4390,  $d_4^{20}$  0.8084. Furan with II gives *N*-methylpyrrole (24.5% yield), *b.p.* 115-0°,  $n_D^{20}$  1.4080,  $d_4^{20}$  0.8068, and with III gives *N*-ethylpyrrole (27% yield), *b.p.* 129.5-10.5°,  $n_D^{20}$  1.4841,  $d_4^{20}$  0.8080, together with a small amt. of  $\alpha$ -ethylpyrrole, *b.p.* 160-70°.

John Livak

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Catalytic transformations of heterocyclic compounds.  
 XI. Combined catalytic dehydration of furan and furanidin (tetrahydrofuran) with secondary and tertiary amines. Yu. K. Yur'ev. *J. Gen. Chem. (U. S. S. R.)* 9, 453-9(1939); cf. *C. A.* 33, 5843<sup>1</sup>.—It had been shown that furan and tetrahydrofuran (I) are readily converted by primary amines in the presence of  $Al_2O_3$  at 400° into *N*-substituted pyrroles and pyrrolidines, resp. (cf. *C. A.* 32, 6399<sup>2</sup>). Similar reaction of I with  $Et_3NH$  and  $Et_3N$  formed considerable  $C_8H_{14}$  and *N*-ethylpyrrolidine (II) in 24% and 6% yield, resp. It is believed that the reaction proceeds with intermediate formation of  $Et_3NCH_2(CH_2)_3CH_2OH$  (III), which is hydrolyzed to give the mono-*Et* deriv. and  $EtOH$  and these are dehydrated to yield II and  $C_8H_{14}$ . The  $H_2O$  liberated in the reaction aids in the hydrolysis of III. The reaction of 8 g. each of furan and  $Et_3NH$  gave considerable  $CO$  and 0.5 g. of a liquid product contg. traces of *N*-ethylpyrrole (IV). The probable cause of the poor IV yield is that the tautomerization of the intermediate 1-hydroxy-4-diethylamino-1,3-butadiene into the amino aldehyde,  $Et_3NCH:CHCH_2CHO$ , and its decompr. into  $Et_3NCH:CHMe$  and  $CO$  proceed at a much greater velocity than the reactions of hydrolysis and dehydration to IV (cf. *C. A.* 31, 1399<sup>3</sup>). C. H.

Lab. Org. Chem. im. N. D. Zelinskii, Moscow State U.

1ST AND 2ND CROSS		PROCESSES AND PROPERTIES INDEX		3RD AND 4TH CROSS	
<p><i>CO</i> <span style="float: right;">10</span></p> <p><b>Catalytic transformations of heterocyclic compounds.</b>  <b>XII. Conversion of pentamethylene oxide (tetrahydro-  pyran) into piperidine, N-ethylpiperidine and penta-  methylenesulfide (penthiophane, tetrahydrothiopyran).</b>  Yu. K. Yur'ev, E. Ya. Pervova and V. A. Sazonova.  <i>J. Gen. Chem.</i> (U. S. S. R.) 9, 500-4 (1939); <i>C. C. A.</i> 33,  6463. — Analogous to the reaction of <math>\gamma</math>-alkylene oxides  (tetrahydrofurans) with <math>\text{NH}_3</math>, primary amines and <math>\text{H}_2\text{S}</math>  in the presence of <math>\text{Al}_2\text{O}_3</math> at 400–300° to yield the correspond-  ing pyrrolidines and tetrahydrothiophenes (thiophanes),  the <math>\delta</math>-alkylene oxides react under the same conditions to  form piperidine and tetrahydrothiopyran (penthiophane)  derivs. Pentamethylene oxide (I), prep'd. from penta-  methyleneglycol, with <math>\text{NH}_3</math> gives piperidine (II) (20%  yield), b. 100°, <math>n_D^{20}</math> 1.4321, and with <math>\text{EtNH}_2</math> gives N-  ethylpiperidine (17% yield), b. 128.5–129°, <math>n_D^{20}</math> 1.4442,  <math>d_4^{20}</math> 0.8232. I with <math>\text{H}_2\text{S}</math> gives pentamethylene sulfide  (III) (60% yield), b. 139.4–140°, <math>n_D^{20}</math> 1.5048, <math>d_4^{20}</math> 0.9701.  II with <math>\text{H}_2\text{S}</math>, passed over <math>\text{Al}_2\text{O}_3</math> at 415° in a N atm., gives  III (4.3% yield). XIII. Synthesis of pyrrolidines and  tetrahydrothiophene by catalytic dehydration of tetra-  methyleneglycol (1,4-butanediol) with ammonia and with  hydrogen sulfide. Yu. K. Yur'ev and N. G. Medov-  shchikov. <i>Ibid.</i>, 628–30. — The yields are slightly lower  than those obtained with tetrahydrofuran (IV) (cf. C. C. A.  32, 5487). Tetramethyleneglycol (V) passed with <math>\text{NH}_3</math>  over <math>\text{Al}_2\text{O}_3</math> at 400° gives pyrrolidine (35% yield) and with  <math>\text{H}_2\text{S}</math> gives tetrahydrothiophene (thiophane) (62.5%  yield). IV is obtained in 2% yield when V is passed over  <math>\text{Al}_2\text{O}_3</math> in a N atm. John Livak</p>					
<p>ASB. S. L. A. DETAIL LITERATURE CLASSIFICATION</p> <p>RECORD SYMBOL</p> <p>RECORD NO. ONLY DOC</p> <p>RECORD NO. ONLY</p> <p>RECORD NO. ONLY</p>					

*Catalytic reactions of heterocyclic compounds. XIV. Mechanism of transformation of oxygen-containing five-membered heterocyclic rings to nitrogen- and sulfur-containing heterocycles. Yu. K. Yur'ev, Kh. M. Minachev and K. A. Samurskaya. J. Gen. Chem. (U. S. S. R.) 9, 1710-16(1939); cf. C. A. 13, 777F. — To prove that intermediate hydroxy amino and hydroxy mercapto compds. are formed when tetrahydrofuran is converted into pyrrolidine or tetrahydrothiophene at high temps. over an  $Al_2O_3$  catalyst the authors showed that these proposed intermediates react smoothly under the conditions to yield the expected compds. Tetrahydrofuran was prepd. by catalytic hydrogenation of furan in the presence of palladized asbestos and also by hydrogenation of furan in an autoclave in the presence of Ni on  $Al_2O_3$ . Yield 86%, b. 64.5-6.5°. Tetramethylene chlorohydrin (I), prepd. by the action of HCl on tetrahydrofuran, b. 63-4°,  $n_D^{20}$  1.4520,  $d_4^{20}$  1.0867; yield 55-7%. Bennett's method (cf. C. A. 23, 2422) was used for the prepn. of I. The yield was 56%, b. 70°,  $n_D^{20}$  1.4910,  $d_4^{20}$  1.0289,  $M_R$  29.85 (calcd. 29.89). It is a colorless oil with a terrible odor. I was converted into tetrahydrothiophene by passing 7-8 drops a min. over  $Al_2O_3$  at 250°, 300°, 350° and 400°. Likewise, tetrahydrofuran and H<sub>2</sub>S were converted into tetrahydrothiophene. The yields were favored by increase in temp. (at 400° 95% was obtained from I and 90.5% from the furan). In every case I gave a higher yield than tetrahydrofuran. A yield of only 23.5% of tetrahydrothiophene was obtained when concd. H<sub>2</sub>SO<sub>4</sub> at 0° was used to dehydrate I. A similar yield was obtained when I and H<sub>2</sub>S were passed at 400° over  $Al_2O_3$ . I was treated with PBr<sub>3</sub> and 1-chloro-4-bromobutane, b. 63-4°,  $n_D^{20}$  1.4965, was obtained. The Gabriel reaction (Ex. 24, 3234(1891)) gave pyrrolidine instead of 1-chloro-4-aminobutane. A 34% yield of pyrrolidine was obtained by passing I and NH<sub>3</sub> over  $Al_2O_3$  at 400°. D. Ackov,*

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1ST AND 2ND ORDERS

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Catalytic transformations of heterocyclic compounds.

XV. The stability of the catalyst and optimum conditions in the transformation of tetrahydrofuran into pyrrolidine and thiophene and in that of furan into thiophene. Yu. K. Yur'ev and V. A. Tronova. *J. Gen. Chem.* (U. S. S. R.) 10, 31-4 (1940); cf. *C. A.* 34, 3731<sup>2</sup>.—In the methods previously described the transformation of tetrahydrofuran (furanidin) into pyrrolidine and thiophene (*C. A.* 10, 3489<sup>1</sup>) and that of furan into thiophene (*C. A.* 10, 3815<sup>2</sup>) are best effected at 400° by passing the reactants at a rate of 8 drops/min. in a strong current of  $NH_3$  and  $H_2S$ , resp. In the prepn. of pyrrolidine and thiophene a 40-cm. layer and in that of thiophene a 72-cm. layer of the  $Al_2O_3$  catalyst are used. The activity of the catalyst remains practically const. for long periods of the reactions.

Chas. Blanc

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<p>The catalytic transformations of heterocyclic compounds. XVI. The synthesis of some pyridine and quinoline derivatives of pyrrolidine. Yu. S. Kuc'ev, V. I. Baran, A. N. Enolova, S. M. Seliverstova and S. I. Chernyakhov. <i>J. Gen. Chem.</i> (U. S. S. R.) 10, 1839-42 (1940); cf. C. A. 34, 4733. When 2-aminopyridine (I) and tetrahydrofuran (II) are passed over <math>Al_2O_3</math> in a N stream at 300°, they give 17% <i>N</i>-(2-pyridyl)pyrrolidine, <i>b</i><sub>p</sub> 102°, <i>d</i><sub>4</sub><sup>20</sup> 1.0441, <i>n</i><sub>D</sub><sup>20</sup> 1.5797, <i>M</i><sub>R</sub> calcd. 45.04, found 46.20 (<i>picrate</i>, <i>m</i>. 198°). Similarly, II and 3-aminopyridine (III) at 400° give 18% <i>N</i>-(3-pyridyl)pyrrolidine, <i>b</i><sub>p</sub> 134-5°, <i>d</i><sub>4</sub><sup>20</sup> 1.0700, <i>n</i><sub>D</sub><sup>20</sup> 1.5853, <i>M</i><sub>R</sub> calcd. 45.04, found 46.34 (<i>picrate</i>, <i>m</i>. 195.5-6°). 2-Methyltetrahydrofuran (IV) and I give 14% <i>N</i>-(2-pyridyl)-2-methylpyrrolidine, <i>b</i><sub>p</sub> 110°, <i>d</i><sub>4</sub><sup>20</sup> 1.0313, <i>n</i><sub>D</sub><sup>20</sup> 1.5550, <i>M</i><sub>R</sub> calcd. 49.56, found 51.26 (<i>picrate</i>, <i>m</i>. 131°). III and IV give 17% <i>N</i>-(3-pyridyl)-2-methylpyrrolidine, <i>b</i><sub>p</sub> 118-19°, <i>d</i><sub>4</sub><sup>20</sup> 1.0438, <i>n</i><sub>D</sub><sup>20</sup> 1.5718, <i>M</i><sub>R</sub> calcd. 40.60, found 51.14 (<i>picrate</i>, <i>m</i>. 128-8.5°). II and <i>n</i>-aminoquinoline give 0.5% <i>N</i>-(<i>n</i>-quinolyl)pyrrolidine, <i>b</i><sub>p</sub> 171°, <i>n</i><sub>D</sub><sup>20</sup> 1.1332, <i>n</i><sub>D</sub><sup>25</sup> 1.6604, <i>M</i><sub>R</sub> calcd. 60.38, found 64.57 (<i>picrate</i>, <i>m</i>. 152.5°). H. M. Leicester</p>																			
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Catalytic transformations of heterocyclic compounds  
XVII. The use of the reaction of transformation of oxygen-containing heterocyclic compounds into nitrogen- and sulfur-containing compounds in establishing the structure of cyclic oxides. Yu. K. Yur'ev, V. I. Gusev, V. A. Tronova and P. P. Vudina. *Zh. Fiz. Khim.* (U. S. S. R.) 41, 344-8 (1967); cf. C. A. 42, 6377. The compound obtained by Frank and Lieben (C. A. 9, 910) by dehydration of 1,6-hexanediol with  $H_2SO_4$  was stated by them to be 2-methyltetrahydropyran. The dehydration actually yields a mixt. of compounds, but the chief product has  $b.p. 83.5^\circ$ . When it is passed over  $AlCl_3$  at  $300^\circ$  in an  $NH_3$  stream, it gives 2-ethylpyrrolidine, and when the gas is  $H_2S$ , the product is 2-ethyltetrahydrothiophene,  $b.p. 155.5-0.5^\circ$ ,  $n_D^{20}$  1.4800,  $d_4^{20}$  0.9451,  $M/R$  calcd. 35.68, found 35.36 ( $HgCl_2$  compd., m.  $100^\circ$ ). The structure of this is proved by its prepn. from synthetic 2-ethyltetrahydrofuran (I). Thus the compd. of F. and L. is actually I. An increased no. of C atoms in the side chain of substituted  $\gamma$ -alkylene oxides causes a lower yield of product when they are converted to the corresponding N and S compounds.

H. M. Leicester

ASAC-56A METALLURGICAL LITERATURE CLASSIFICATION

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YUR'EV, Yu. A.

XX. Transformation of heterocycles containing oxygen into heterocycles containing nitrogen or sulfur.  
Yu. K. Yur'ev, S. B. Dubrovina, and E. P. Trezgov (Moscow State Univ.), J. Gen. Chem. (U.S.S.R.) 16, 943-50 (1946); cf. C.A. 32, 4071<sup>u</sup>.—Dihydrofuran (9 g.) passed over  $Al_2O_3$  at  $400^\circ$  in an  $NH_3$  stream gave 0.2 g. pyrrolidine, b.  $83-8^\circ$  (picrate, m.  $111-12^\circ$ ), and 0.5 g. pyrrole, b.  $130-1^\circ$ ; much decomposition was observed. Dihydrofuran (7 g.) passed over  $Al_2O_3$  at  $325^\circ$  in a  $H_2S$  stream gave 0.4 g. thiophene and a very small amt. of tetrahydrothiophene; somewhat greater yields, and more decompn., were obtained at  $400^\circ$ . 3-Bromotetrahydrofuran passed over  $Al_2O_3$  in a stream of  $H_2S$  gave at  $400^\circ$  2 g. of crude product, which dropped to 1 g. at  $300^\circ$  (10 g. starting material in all cases), and was sepd. into thiophene and tetrahydrothiophene. Dihydrofuran failed to undergo a transformation after passage over a Pt-charcoal catalyst at  $140-200^\circ$ , but on standing at room temp. in a sealed tube it yielded a minute amt. of furan. Tetrahydrofuran was unchanged by passage over this catalyst at  $400^\circ$ . Dihydrofuran gave 60% dihydrothiapyran, b<sub>743</sub>  $143.6-4.2^\circ$ , n<sub>D</sub><sup>20</sup> 1.5328, d<sub>4</sub><sup>20</sup> 1.0244, after passage over  $Al_2O_3$  at  $400^\circ$  in a  $H_2S$  stream. XX. Transformations of heterocycles containing oxygen into heterocycles containing selenium. Yu. K. Yur'ev, Ibid. 851-4.—Furan (10 g.) was passed over  $Al_2O_3$  at  $450^\circ$  in a current of  $H_2Se$ ; the product, after washing with alkali, was identified as selenophene, b.  $110-12.7^\circ$  (23%), n<sub>D</sub> 1.5642, d<sub>4</sub><sup>20</sup> 1.5251. Tetrahydrofuran on similar treatment at  $400^\circ$  gave 54% selenophene (tetrahydroselenophene), b<sub>743</sub>  $139.2-2.6^\circ$ , n<sub>D</sub><sup>20</sup> 1.5479, d<sub>4</sub><sup>20</sup> 1.4715. Similarly, pentamethylene oxide at  $400^\circ$  gave 50% pentamethylene selenide, b<sub>755</sub>  $159-2.5^\circ$ , n<sub>D</sub><sup>20</sup> 1.5461, d<sub>4</sub><sup>20</sup> 1.3962.

G. M. Kozolagoff

YURIEV, Yu.

K.

"Catalytic Transformations of Heterocyclic Compounds. XX. The transformation of Heterocycles containing oxygen into Heterocycles containing selenium." by Yu. K. Yuriev (p.253)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1946, Volume 16, No. 6

CA

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Catalytic transformations of heterocyclic compounds.  
XXI. Transformation of furan and furanidine into hydrocarbons. Yu. K. Yur'ev, V. A. Tronova, M. Ya. Kuznetsova, and E. G. Novosadova (Moscow State Univ.). *J. Gen. Chem. (U.S.S.R.)* 17, 131-8(1947) (in Russian); cf. *C.A.* 41, 1654c.—Furanidine (5-6 g.) was passed over  $Al_2O_3$  in a strong current of  $C_2H_2$  at  $375^\circ$ ; the catalyst slowly became covered with a brown deposit and had to be regenerated occasionally by air-blowing. The catalyst temp. rose initially up to  $405-430^\circ$ , becoming stabilized generally at about  $385^\circ$ . The yield of products was 1.5-1.95 g. The combined products from 10 runs were dried over  $CaCl_2$  and fractionated. A fraction (0.76 g.), b.  $78-84^\circ$ ,  $n_D^{20}$  1.4701, contained cyclohexadiene, formed evidently by bond redistribution of the initially formed cyclohexyne. A fraction (1.1 g.), b.  $100-20^\circ$ ,  $n_D^{20}$  1.4740, appeared to be a product of  $C_6H_6$  condensation over  $Al_2O_3$ , admixed with methylcyclohexadiene (from propylene and  $C_2H_2$ ). Furan (5 g.) was passed over activated C in 1.25 hrs. in a H stream at  $375-500^\circ$ ; the best yield (16%) of butadiene was obtained at  $425^\circ$ ; when Cu (5%) on activated C was used at  $200-450^\circ$ , the best yield of butadiene (20.1%) was obtained at  $425^\circ$  when 5 g. furan was passed through the catalyst in 1.5 hrs. The results are interpreted as favoring the possibility of petroleum formation from carbohydrate matter in nature.  
G. M. Kosolapoff

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Behavior of 3-bromofuranidine in the Grignard reaction.  
I. Yu. K. Yur'ev, M. G. Voronkov, I. P. Grigorov, and  
G. Ya. Kondrat'eva. *Zhur. Obshchei Khim.* (J. Gen.  
Chem.) 18, 1804-10 (1948); cf. following abstr.—*J.*  
Halofuranidines (3-halotetrahydrofurans) react with Mg  
only sluggishly, yielding mixed organo-Mg compds. which  
rearrange to a great extent, with ring opening, to give  
MgX derivs. of  $\gamma$ -unsatd. primary alcs. and react only to a  
minor extent as true Grignard reagents. Use of Na in place  
of Mg results in complete rearrangement and ring opening.  
3-Bromofuranidine (75 g.) in Et<sub>2</sub>O was added to 12 g. Mg  
(activated by iodine) in 200 ml. Et<sub>2</sub>O over 10 hrs. with  
stirring and boiling, let stand overnight, heated 2 hrs.,  
treated with 67 g. allyl bromide in Et<sub>2</sub>O, boiled 1 hr., and  
treated with dil. H<sub>2</sub>SO<sub>4</sub>; the usual treatment gave a variety  
of products from which were recovered 6 g. *allylcarbinol*,  
bp 113.5-14.5°, d<sub>4</sub><sup>20</sup> 0.8454, n<sub>D</sub><sup>20</sup> 1.4227; 3.5 g. *3-allylfur-*  
*anidine*, bp 140.5-41°, d<sub>4</sub><sup>20</sup> 0.8829, n<sub>D</sub><sup>20</sup> 1.4448; and 60 g.  
unchanged starting material. *1-Penten-4-ol*, bp 114.5-  
10°, d<sub>4</sub><sup>20</sup> 0.8314, n<sub>D</sub><sup>20</sup> 1.4245, was obtained in 57% yield  
from C<sub>4</sub>H<sub>9</sub>MgCl and AcH; this (95 g.) in CHCl<sub>3</sub> was  
treated with 60 g. Br in CHCl<sub>3</sub> with cooling and, after  
evapn., the crude dibromide was shaken 28 hrs. with 20 g.

powd. KOH in Et<sub>2</sub>O, with addn. of 20 g. KOH every 4 hrs.,  
to yield 45% *2-methyl-4-bromofuranidine*, bp 64.5°, d<sub>4</sub><sup>20</sup>  
1.4231, n<sub>D</sub><sup>20</sup> 1.4770. This (82 g.) was slowly added to  
12 g. Mg in Et<sub>2</sub>O at reflux, heated 4 hrs. longer, treated  
with 80 g. allyl bromide in Et<sub>2</sub>O, heated 2.5 hrs., let stand  
overnight, and treated as above to yield 28% *1-penten-4-*  
*ol* and 1.5 g. *2,2'-dimethyl-4,4'-bifuranidine*, bp 101.5-2°,  
d<sub>4</sub><sup>20</sup> 0.9056, n<sub>D</sub><sup>20</sup> 1.4553; if the reaction mixt. with Mg is  
decompd. by dil. acid prior to addn. of allyl bromide, the  
products include (low yields): *2-methylfuranidine*, bp  
79-80°, d<sub>4</sub><sup>20</sup> 0.8576, n<sub>D</sub><sup>20</sup> 1.4092, the above-described bi-  
furanidine, and 27% *1-penten-4-ol*. Addn. of 38 g. 3-  
bromofuranidine to a dry Et<sub>2</sub>O soln. of MgBr<sub>2</sub> (obtained in  
anhyd. state from 12.1 g. Mg and 95 g. BrCH<sub>2</sub>CH<sub>2</sub>Br)  
yields a bulky ppt.; heating 20 hrs. and decompn. by  
H<sub>2</sub>O gave 30 g. unchanged starting material and traces of  
lower- and higher-boiling materials, which were not iden-  
tified. Addn. of 38 g. 3-bromofuranidine to 23 g. Na in  
Et<sub>2</sub>O, and 4 hrs. refluxing gave 80% *1-buten-4-ol*, bp  
112.5-13.5°, d<sub>4</sub><sup>20</sup> 0.8440, n<sub>D</sub><sup>20</sup> 1.4232. G. M. K.

USSR/Chemistry - Synthesis  
Furans

Oct 48

"Synthesis of Beta-Alkylfuranidines, II," Yu. K.  
Yur'yev, I. P. Gragerov, Moscow Ord of Lenin State  
U imeni M. V. Lomonosov, Lab of Org Chem imeni Acad  
N. D. Zelinskiy, 5 pp

"Zhur Obshch Khim" Vol XVIII, No 10

Gives general method for synthesis of beta-alkyl-  
tetrahydrofurans by reaction of lithium alkyls  
with beta-bromotetrahydrofuran. Ring opening  
occurred by action of Mg on beta-bromotetrahydro-  
furan with formation of 3-buten-1-ol. Submitted  
22 Sep 47.

2/50T68

IUR'EV, Iu. K.

Iu. K. Iur'ev and I. P. Gragerov, Synthesis of  $\beta$ alkyl-furanidines. II. p. 1811

This work gives a general method for the synthesis of  $\beta$ alkyl-furanidines by interaction of lithium alkyls with  $\beta$  bromo-furanidine. It is shown that the reaction of lithium on  $\beta$ -bromo-furanidine causes the opening of the ring of the latter to occur with the formation of allyl carbinol.

The Lomonosov, Moscow State University, Holder of the Order of Lenin  
The Zelinskii Lab. of Organic Chem., September 22, 1947

SO: Journal of General Chemistry (USSR) 28, (80) No. 10 (1948):

PA 53/49125

USSR/Chemistry - Hydration  
Chemistry - 2-Butyne-1, 4-diol

Oct 48

"Hydration of 2-Butyne-1, 4-diol," Yu. K. Yur'yev,  
I. K. Karobitsyn, Ye. K. Mises, Lab of Org Chem  
Imeni Acad N. D. Zelinsky, Moscow State U Imeni  
M. V. Lomonosov, 1 2/3 pp

"Dok Ak Nauk SSSR" Vol IXII, No 5

Hydration of 2-butyne-1, 4-diol in methanol in  
presence of mercuric sulfate or its solution in  
27% sulfuric acid gave a 37% theoretical yield of  
4-methoxy-1-butanol-2-one, b.p. 86.5 at 9 mm,  
d (20/4), 1.095, n (20/D), 1.4395. Use of other

53/49125

USSR/Chemistry - Hydration (Contd) Oct 48

Solvents resulted in resinification. Submitted  
by Acad A. N. Nesmeyanov, 13 Aug 48.

YUR'YEV, YU. K.

53/49125



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CA

Hydration of 2-butyne-1,4-diol. Yu. K. Yur'ev, I. K. Kozlovskaya, and E. K. Brige. *Doklady Akad. Nauk S.S.S.R.* 63, 645 (1948). Hydration of 2-butyne-1,4-diol (I) in MeOH in the presence of Hg sulfate gives 4-methoxy-1-butanol-2-one (II). I (43 g) was added in 32 g. MeOH to 32 g. MeOH and 2 g. Hg sulfate with cooling, then stirred 8 hrs. with addn. of two 2-g. portions of Hg sulfate, neutralized with  $\text{Na}_2\text{CO}_3$ , altered, dried, and distd., yielding 37% II, b, 86.5-7.5°,  $d_4^{20}$  1.095,  $n_D^{20}$  1.4305. The result was the same if 37%  $\text{H}_2\text{SO}_4$  was used for the medium. II gives a 2,4-dinitrophenylhydrazone, m. 22.0° (from EtOH). The product results from migration of the OH group to give a 1,2-diol of allenic type, which rearranges to an acyclic and then add. MeOH to give II. G. M. Kosolapoff

438.34 METEOROLOGICAL LITERATURE CLASSIFICATION

RESEARCH REPORT

RESEARCH REPORT

PA 55/49T20

YUR'YEV, YU. K.

USSR/Chemistry - Ethylene Sulfide  
Chemistry - Hydrogen Sulfide

Nov 48

"Interaction of Ethylene Sulfide with Hydrogen Sulfide in the Presence of Aluminum Oxide," Yu. M. Yur'yev, K. Yu. Novitskiy, Lab of Org Chem Inst of M. D. Zelinskii, Moscow State U Inst M. V. Lomonosov, 3 pp

"Dokl Ak Nauk SSSR" Vol XXIII, No 3

Study of interaction of ethylene oxide with hydrogen sulfide in presence of aluminum oxide at 200° showed that basic reaction products, five- and six-member heterocyclic compounds with two heteroatoms, were acetaldehyde thiacetal, alomane

55/49T20

USSR/Chemistry - Ethylene (Contd)

Nov 48

thiorane and acetaldehyde. During contact of ethylene oxide with aluminum oxide, both alomane and acetaldehyde were obtained at 200°. Latter was disproportionate. Submitted by Acad A. M. Nemeyanov 15 Sep 48.

55/49T20

Avt: YUR'YEV, Yu. K., ALEKKSANDROV, L. Ye., ARBATSKIY, A. V. /IDR/

29566

Sintyee nyekotorykh gomologov i N-samyeshchyennykh pirrola i pirrolidina.  
Zhurnal Obshch Khimii, 1949, vyp. 9, s. 1730-33.-Bibliogr: s. 1733

SO: LETOPIS' NO. 40

YUR'YEV, Yu. K.

PA 65/49T27

USSR/Chemistry - Heterocyclic  
Compounds

Apr 49

Furan, Tetrahydro-

"Contact Conversion of Pyrrolidine, Pyrrolidine  
and Thiophane XIII" Yu. K. Yur'yev, A. A. Bugor-  
kova, Moscow Ord of Lenin State U imeni M. V.  
Lomonosov Lab of Org Chem imeni Acad N. D.  
Zelinskiy 34 pp

"Zhur Obshch Khim" Vol XIX, No 4

Complete hybrids of these five-membered heterocyclic  
compounds similar to furan, pyrrole  
and thiophene. The compounds are in the  
temperature range 100-150°C. 49T27

PA 65/49128

YUR'YEV, Yu. K.

USSR Chemistry - Thiophene, Tetrahydro- Apr 49  
 Furan, Tetrahydro-

The conversion of Alpha-Beta- and Alkylfuranidines  
 into Tetrahydro Thiophenes, XIII,"  
 Yu. K. Yur'yev, I. P. Grigorev, Moscow Ord of  
 Lenin State University M. V. Lomonosov, Lab of Org  
 Chem, 1949, vol. 1, F. D. Zelinskii, 54 pp

"Zhur Otchuch Khim" Vol XIX, No 4

Alpha-alkyl and beta-alkyl-thiophenes are pre-  
 pared by the subject reaction, which gives a  
 greater yield (72-81% of the theoretical) of the  
 beta-alkyl-thiophenes than of the alpha-compounds

65/49128

USSR Chemistry - Thiophene, Tetrahydro- Apr 49  
 (Contd)

(whereas alpha-alkyl is 65-70% of the theoretical). The  
 former compounds have higher boiling points, specific  
 gravity, and indexes of refraction than the  
 latter. Submitted 31 Jan 48.

65/49128

CA

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Synthesis of some homologs and N-substituted derivatives of pyrrole and pyrrolidine. Yu. K. Yur'ev, L. E. Aleksandrov, A. V. Arbat'skiĭ, V. M. Kikataev, I. K. Korobitsyna, and M. A. Bryanishnikova. *Zhur. Obshch. Khim.* (J. Gen. Chem.) 19, 1730-3 (1949); cf. *Uchenye Zapiski Moskov. Gosudarst. Univ.*, No. 79 (1945).—Furan (12 g.) and 17 g.  $\text{AmNH}_3$  passed in a N stream at 8-10 drops per min. over  $\text{Al}_2\text{O}_3$  at 465-70° gave 14% 1-amylopyrrole, b<sub>p</sub> 95-6°, d<sub>4</sub><sup>20</sup> 0.8643, n<sub>D</sub><sup>20</sup> 1.4731. Similarly, at 450°, 8 g. 2-ethylfuran in  $\text{NH}_3$  gave 5% 2-ethylpyrrole, b<sub>p</sub> 104-5°, d<sub>4</sub><sup>20</sup> 0.8942, n<sub>D</sub><sup>20</sup> 1.4942. Furanidine (I) (118 g.) and 14.4 g. allylamine at 400° gave 1-allylpyrrolidine, isolated as the picrate, m. 141° (from EtOH), in unstated yield, with much tar. I (7 g.) and 9.7 g.  $\text{AmNH}_3$  at 380° gave 55.5% 1-amylopyrrolidine, b<sub>p</sub> 81-2°, d<sub>4</sub><sup>20</sup> 0.8191, n<sub>D</sub><sup>20</sup> 1.4439; picrate, m. 117.5-18° (from EtOH). I (5 g.) and 5.6 g. cyclopentylamine at 400° gave 40% 1-cyclopentylpyrrolidine, b<sub>p</sub> 91-2°, d<sub>4</sub><sup>20</sup> 0.8992, n<sub>D</sub><sup>20</sup> 1.4744; picrate, m. 149.5-50°. Furanidine (36 g.) and 10 g.  $\text{C}_4\text{H}_9\text{NH}_2$  at 400° gave 1.3 g. 1,1'-ethylenedipyrrolidine, b<sub>p</sub> 151-2°, d<sub>4</sub><sup>20</sup> 0.8980, n<sub>D</sub><sup>20</sup> 1.4715. Similarly, 20 g. I and 10 g. *m*- $\text{C}_6\text{H}_4(\text{NH}_2)_2$  gave 2.8 g. 1,1'-*m*-phenylenedipyrrolidine, b<sub>p</sub> 137-9°, d<sub>4</sub><sup>20</sup> 1.071, n<sub>D</sub><sup>20</sup> 1.5010; picrate, m. 126-7° (from EtOH). 2-Ethylfuranidine (10.2 g.) in  $\text{NH}_3$  similarly gave 9% 2-ethylpyrrolidine, b<sub>p</sub> 122-3°, d<sub>4</sub><sup>20</sup> 0.8893, n<sub>D</sub><sup>20</sup> 1.4420; picrate, m. 84-5° (from EtOH).

G. M. Kosolapoff

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CA

Catalytic dehydration of 4-amino-1-butanol. XXV  
 Yu. K. Yur'ev, G. P. Mikhalevskii, and S. Z. Shapiro  
 (Lomonosov State Univ., Moscow); *Zhur. Obshchei*  
*Khim. (J. Gen. Chem.)* 19, 2217-21 (1969); *cf. C.A.* 32,  
 448; 44, 1002a, 1482d. -Hydrolysis of  $\text{C}_4\text{H}_9\text{N}_2\text{O}$  by  
 aq.  $\text{K}_2\text{CO}_3$  gave 80%  $\text{HO(CH}_2)_3\text{OH}$ , b.p. 108-109°, d<sub>4</sub><sup>20</sup>  
 1.0107, n<sub>D</sub><sup>20</sup> 1.4388, which with  $\text{HCl}$  gave  $\text{C}_4\text{H}_9\text{N}_2\text{O}$ ,  
 b.p. 40-41°, d<sub>4</sub><sup>20</sup> 1.4322, n<sub>D</sub><sup>20</sup> 1.4485. This (110 g.) in 510  
 ml.  $\text{EtOH}$  was refluxed 8 hrs. with 60 g.  $\text{KCN}$  in 145 ml.  
 $\text{H}_2\text{O}$ , yielding 56%  $\text{HO(CH}_2)_3\text{CN}$ , b.p. 135-6°, d<sub>4</sub><sup>20</sup> 1.0416,  
 n<sub>D</sub><sup>20</sup> 1.4178. This (21 g.) in 200 ml.  $\text{BuOH}$  treated at  
 reflux temp. with 13 g.  $\text{Na}$  yielded 24%  $\text{H}_2\text{N(CH}_2)_3\text{OH}$   
 (I), b.p. 307-8°, d<sub>4</sub><sup>20</sup> 0.8689, n<sub>D</sub><sup>20</sup> 1.4581. Passage of 7 g.  
 I at 5-6 drops/min. over  $\text{Al}_2\text{O}_3$  at 400° with a N atm. in  
 the reaction tube gave 37% pyrrolidine, b.p. 85-7°, d<sub>4</sub><sup>20</sup>  
 0.8569, n<sub>D</sub><sup>20</sup> 1.4431 (picrate, m. 111.5°); at 350° the yield  
 was 25%. Similar reaction but in a  $\text{NH}_3$  atm. at 400° gave  
 20% pyrrolidine and about 10% pyrrole; at 350° only 20%  
 pyrrolidine and traces of pyrrole were obtained. In all  
 expts. much carbonization took place, indicating severe  
 decompn. of I. G. M. K./

PA 66/49122

YUR'YEV, YU. K.

USSR/Chemistry - Dehydration Aug 49  
Glycols

"Catalytic Dehydration of Thiodiethylene Glycol and 1,4-Thioxane with Hydrogen Sulfide," Yu. K. Yur'yev, K. Yu. Novitskiy, Lab of Org Chem Mend N. D. Zelinskiy, Moscow State U Lenin M. V. Lomonosov, 31 pp

"Dok Ak Nauk SSSR" Vol LXVII, No 5

Records the yields of dithiane from the reactions of thiodiethylene glycol with hydrogen sulfide and thioxane with hydrogen sulfide in the presence of aluminum oxide during a temperature interval of 200-400° C for periods 66/49122

USSR/Chemistry - Dehydration Aug 49  
(Contd)

of 55-60 minutes for 11 experiments. On the basis of these, the melting point of dithiane is computed at 108-110° C. Submitted 1 Jun 49.

66/49122



Simultaneous catalytic dehydration of thiodiethylene-  
glycol and  $\beta$ -oxathiane with hydrogen sulfide. Yu. K.  
Yur'ev and K. Yu. Novitskiĭ. *Doklady Akad. Nauk*  
S.S.S.R. 67, 303-6 (1949).— Passage of  $S(CH_2CH_2OH)_2$   
(I) or  $S(CH_2CH_2OCH_2CH_2)_2$  (II) over  $Al_2O_3$  at 200–400°  
in  $H_2S$  yields  $S(CH_2CH_2)_2$ ,  $S(CH_2CH_2)_4$ ; the optimum temps.  
are 225–75° and 250°, resp., at which 67% yields are ob-  
tained. I, b, 130–7°,  $d_4^{20}$  1.1815,  $n_D^{20}$  1.6211, was passed  
over  $Al_2O_3$  in a rapid  $H_2S$  stream at 1 g. per 0.8 min.;  
similar conditions were used for II, b, 145.5–0.5°,  $d_4^{20}$   
1.1176,  $n_D^{20}$  1.5072, which was obtained by heating I with  
1 mole  $KHSO_4$ . *Dikisane* m. 110.5° (from  $Et_2O$ , followed  
by sublimation). G. M. Kosolapoff

Simultaneous dehydration of ethylene glycol with hydrogen sulfide. Yu. K. Yur'ev, K. Yu. Novitskii, and E. V. Kukhar'kaya. *Doklady Akad. Nauk S.S.S.R.* 68, 541-4 (1949). - Reaction of  $(CH_2OH)_2$  with  $H_2S$  over  $Al_2O_3$  at  $400^\circ$  yields mainly thiophene, with liberation of  $CH_4$ ; over an aluminosilicate catalyst  $O(CH_2CH_2OH)_2$  is dehydrated and dioxane is formed smoothly. The reaction probably proceeds via formation of ethylene oxide. Passage of 293.8 g. glycol (at 10 g./hr.) in a  $H_2S$  stream over  $Al_2O_3$  at  $225^\circ$  gave 24 g. water-insol. oil, which gave 3.4 g. *p*-oxathiane, b.p.  $145-6^\circ$ ,  $n_D^{20}$  1.5023,  $d_4^{20}$  1.1100, and 0.6 g. *p*-dikiane, m.  $109^\circ$ ; the aq. layer gave 11 g. AcH, 0.1 g. of its acetal with glycol, b.p.  $82.6-3.5^\circ$ ,  $n_D^{20}$  1.3900,  $d_4^{20}$  0.9882, 17 g. *p*-dioxane, b.p.  $101-1^\circ$ ,  $n_D^{20}$  1.4230,  $d_4^{20}$  1.0308, as well as 105 g. unreacted glycol. Similar reaction at  $400^\circ$  gave, from 280 g. glycol, 1.2 g. thiophene and a mixt. of unresolved S derivs.; considerable amts. of  $CH_4$  were evolved.  $O(CH_2CH_2OH)_2$  (20 g.) heated to  $200^\circ$  over 4 g. aluminosilicate catalyst gave 88.5% dioxane.  $(CH_2OH)_2$  was not dehydrated even at  $200^\circ$ . G. M. Kosolapoff

6A

Dehydration of thiodiethyleneglycol and disproportionation of *p*-oxathiane. Yu. N. Yur'ev and K. Yu. Novitskiĭ. *Doklady Akad. Nauk S.S.S.R.* 68, 717-19 (1949); cf. preceding abstr. —  $S(CH_2CH_2OH)_2$  (10 g., b. 136-7°,  $n_D^{20}$  1.5211,  $d_4^{20}$  1.1815) passed over  $Al_2O_3$  in 90 min. at 225° in a N atm. gave 4.1 g. (83%) *p*-dithiane, m. 109.5°, 0.6 g. *p*-oxathiane, bps 145.8°,  $n_D^{20}$  1.5000,  $d_4^{20}$  1.1160, and a trace of an aldehyde, probably AcH. Heating 30 g.  $S(CH_2CH_2OH)_2$  and 8 g. aluminosilicate catalyst to 170-80°, and then at 230-40° when distn. of oxathiane was complete, gave 17 g. *p*-oxathiane, bps 147-8°,  $n_D^{20}$  1.5088,  $d_4^{20}$  1.1180, and 3.1 g. *p*-dithiane. Passing 12.5 g. oxathiane over  $Al_2O_3$  at 230° in 90 min. in a N atm. gave 5.4 g. unreacted material, 0.9 g. *p*-dithiane, and some AcH; at 250° 3.9 g. unreacted material is obtained, as well as 0.8 g. dithiane and some AcH;  $H_2S$  was detectable. G. M. Kosolapoff

CA

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Synthesis of amines of the cyclohexano series Yu. K. Vur'ev and I. K. Korobitsyna. *Vestnik Moshch. Univ.* No. 3, Ser. Fiz.-Mat. i Tekhn. Nauk No. 2, 87 (1950).  
 $\text{HCO}_2\text{NH}_2$ , prepd. by slow action of 115 g.  $\text{HCO}_2\text{H}$  and 110 g.  $(\text{NH}_4)_2\text{CO}_3$ , is treated at 160-180° with 50 g. cyclohexanone and heated 7 hrs. with recycling of the distil. ketone after drying; after distil. and refluxing the sepd. formyl deriv. 5 hrs. with 75 ml. concd.  $\text{HCl}$ , 30%  $\text{KOH}$  is added to isolate 40% cyclohexylamine, bp 133-4°,  $n_D^{20}$  1.4601,  $d_4^{20}$  0.8050, and 13% dicyclohexylamine, bp 121-4°,  $n_D^{20}$  1.4852,  $d_4^{20}$  0.9114.  $\text{HCO}_2\text{NH}_2$  (81 g.) treated similarly with 36 g. cyclohexanone gave 33% N-ethylcyclohexylamine, bp 114-15°,  $n_D^{20}$  1.4820,  $d_4^{20}$  0.8087; *picric*, m. 137° (from  $\text{EtOH}$ ). Similarly,  $\text{HCO}_2\text{NH}_2$  (from 102 g.  $\text{PhNH}_2$  and 120 g.  $\text{HCO}_2\text{H}$ ), and 50 g. cyclohexanone gave 40% N-cyclohexylaniline, bp 158-5-9.5°,  $n_D^{20}$  1.5610,  $d_4^{20}$  1.0155.  
 G. M. Kuznetsov

1951